



Obstacles to Breastfeeding to WHO Guidelines Among Rural Women in the Dindigul District of Tamil Nadu, India

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INTRODUCTION

The benefits of breastfeeding for both the baby and the mother are well-established. Colostrum, the first breast secretion following childbirth, has unique immune-protective properties due to high antibody and cytokine contents. Breastmilk delivers a perfect balance of easily digestible protein and fat along with protective antibodies that are integral in preventing diarrhea and pneumonia. Therefore, the World Health Organization (WHO) has established the following guidelines: 1) Breastmilk should be introduced within the first hour after birth, 2) The infant should be fed exclusively breastmilk until 6 months of age, and 3) Breastmilk should be given to the child until at least two years of age. In Tamil Nadu, however only 48.3% of infants in Tamil Nadu are exclusively breastfed (EBF) until 6 months, less than the already low overall rate of 54.9% in India. Previous literature has identified the early introduction of cow's milk into the infant's diet, unsuitable work conditions, a cultural gender gap in feeding, and cultural perceptions of breastmilk and colostrum as possible reasons for the above pattern. Policies in place to incentivize institutional births and time-off from work exist as cash-benefit programs or a fully-paid six month maternity leave. However, the national maternity leave applies only to 10% of women in the organized labor sector. The program requires proof of employment for eighty days, twelve months before the delivery date which excludes women of the unorganized sector who live in a state of constant job insecurity leaving only cash-schemes available.

The present study aims to address the following research questions:

- I. What are the sources of stress in the health of rural women which can impede breastfeeding?
 - a. General state of health
 - b. Labor and delivery circumstances
- II. What other lifestyle factors influence breastfeeding?
 - a. Time Poverty: affects feeding on demand, length of feeding
 - a. Cultural Factors: colostrum feeding, gender inequality
 - b. Employment and Financial Constraints: affects being able to spend time with the baby
- III. What is the effectiveness of current maternity benefits policies in rural Tamil Nadu?

METHODOLOGY

Methods:

A breastfeeding practice questionnaire was designed to access the following factors during individual interviews: the mother's work status, diet during pregnancy and after birth, her breastfeeding practices, her ability to bring her children to work and breastfeed in public, her connections to other women in community institutions, and the financial and cultural pressures she faces. The answers to interview questions were analyzed qualitatively and quantitatively. Stress level indicators were identified from literature review and used to quantitatively assess mothers' stress levels relevant to breastfeeding.

Stress Level	Factor and Description	Score	Reasoning	Source
High	Delivery Complications (Breech birth, nuchal cord, c-section)	2	Maternal and fetal distress, delayed skin-to-skin contact, delayed first nursing likely	Dietche et al., 2018
High	Prolonged labor (first time mothers >20 h., multiparous >14 h.)	2	Maternal and fetal distress, risk of maternal blood loss and oxygen deprivation for baby	American Pregnancy Association, 2018
High	Return to work before 6 months postpartum	3	Before the baby's EBF age recommended by WHO	Fieg, 2011
Medium	Return to work 6-10 months postpartum	2	Past the baby's recommended EBF age; 40-week mark of maternity leave is associated with the lowest infant mortality in studies	Ruhn, 2000
Low	Return to work 10-24 months postpartum	1	Baby can be weaned to mostly eat solid food; 24 months is within WHO's recommended total breastfeeding time guideline	Fieg, 2011

Thirty women who had children in the past 3 y.o. were interviewed using the breastfeeding practice questionnaire. For proper comparison, equal numbers of working vs non-working women, as well as women working in organized vs. unorganized sector were interviewed. Women were contacted with interview requests via local Self-Help Groups and Integrated Child Development Services (ICDS) centers. The ICDS records were also used to collect information on the nutritional status of children. The 3-year cutoff for the age of children was chosen for the following reasons: uniformity of the sample, large number of eligible families, better maternal recall, and the availability of ICDS records. Participants gave verbal consent. To provide context for the mothers' experiences and understand the available nutritional and healthcare advice, individual interviews of three healthcare workers were also conducted. Additionally, focus group sessions for working and non-working mothers of different generations were conducted to assess cultural and social norms surrounding their breastfeeding experience as well as access to various government schemes

Area of Study:

The interviews were conducted in the villages around the town of Kannivadi, part of Riaddachatram Bloc in Oddanchatram, a sub-district of Dindigul. The statistics surrounding Oddanchatram show a picture of disadvantage: only 58.9% of the population has access to drinking water, 65.6% of households have indoor plumbing, 70% of women take iron tablets, and 12% of adolescent girls are able to take folic acid supplements. 35.5% of children under five are stunted and 25.7% experience wasting

RESULTS

Demographics:

The total of 30 women were interviewed; of those, 15 were working productively outside of home and 15 were not. Of those working outside of home, 8 worked in unorganized sector while 7 worked in organized sector. The average age of participants was 26.9 years they were spread across four demographic regions in Dindigul. The Village of Sevenakkayarapatthi was made up of exclusively scheduled caste women and accounted for half of the respondents. Ottakovilpatti was another scheduled caste village with 20% of the respondents. Pudukatti and Pupankulam were both backwards castes villages and accounted for 13.3% and 3.3% of the sample, respectively. The town of Kannivadi accounted for 10% of the sample. Nearly 40% of working women were casual laborers in the private sector, ranging from factory and forest jobs to agricultural labor. Given that the other women who worked as hospital nurses, teachers, and workers in shops were hired on a salary bases, they were not considered as a part of the unorganized sector. All participants utilized antenatal checkup services at either a government or private hospitals and half of the 30 women underwent a C-section for at least one of their children. The most commonly cited reason for a C-section was a diagnosis of low amniotic fluid which is often overdiagnosed in facilities without proper imaging equipment.

Exclusive Breastfeeding:

Approximately 53% of the study participants were able to practice Exclusive Breastfeeding (EBF) for at least 6 months, higher than reported rates in Tamil Nadu and consistent overall in India. The distribution of the cessation of EBF, however, is uneven, with nearly 40% of women stopping EBF before four months in the overall sample. Of the working women, 7 of 15 EBF for at least 6 Months, while 9 of the 15 non-women reported doing so. This difference was not statistically significant ($p=.72$). The difference, however, is still scientifically important as it may show a trend that will become more apparent in a larger sample. The self-identified reasons for ceasing breastfeeding are shown in Chart 2.4. For those who stopped before 6 months, the top three reasons were: 1) insufficient milk, 2) fear that the baby is hungry or thirsty, and 3) that it just felt natural to wean the child at the time. Of the 14 women who stopped EBF prior to 6 months, the most common supplements were water, cow milk, and Cerelac, an infant formula brand. Water was preferred by non-working women while Cerelac was used by working women. When asked the reason behind choosing Cerelac, a product that would not be readily available in the village, all three women said that they saw the advertisement on TV. Many women also used cow milk as a supplement to breastmilk. The amount of water given by all mothers is large relative to the baby's stomach volume (750 mL), with the majority falling into a range between 150mL and 1L a day.

Work Pressure:

Of the 15 working women in the sample, the majority went back to work after the baby was 10 months, therefore exhibiting low stress for breastfeeding since at this point the baby was eating weaning foods. Another 4 left to go back to work after the six-month mark, therefore having enough time to exclusively breastfeeding their infant, leaving only 3 working women in the high stress marker of women who were trying to work and exclusively breastfeed. Of those who were high stress, however, none were able to EBF past four months (Chart 2.15). The reasons for going back to work among the women were overwhelmingly financial; the women's income was needed by the family or her maternity leave was ending at that time. Many of the women often left their job to be with their child until after ten months and then joined another job since the maternity leave was either too small or nonexistent. Within the high stress category, casual laborers were overrepresented. Among the women of the medium stress category, the majority worked in a shop or some other type of formal employment. The low stress category was the most diverse because most women quit their job and then got a new one in the same or different field, therefore pulling women from all sectors. Of the women in the high stress category, none were able to breastfeed past four months. Those who were in the low stress category for the most part also EBF for at least six months. For women who went back at six months, however, a very diverse array of responses was seen with roughly equal numbers being weaned at various times prior to and at six months.

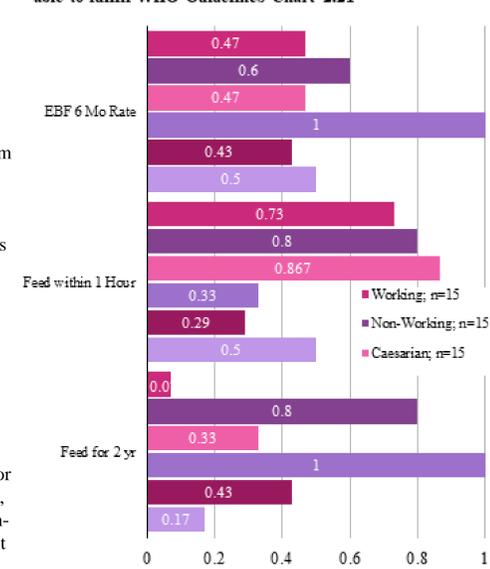
Good Breastfeeding Practices:

Within the study, 24 of the 27 women (who were able to recall) fed colostrum to their babies. For those unable to feed, the baby was often in the ICU. In one case, however, a mother was unconscious following her C-section and her mother-in-law squeezed the colostrum out of her breast. Most other women, however, fed colostrum because of immunological benefits. Another reason was a lack of realization that Colostrum was separate from breastmilk. Many women believed that it was simply a natural process and fed their baby the very first product. Within the survey it was found that only 12 of the 30 women were able to breastfeed for the recommended two years; of those a statistically significant ($p<.024$) difference between productively working and non-working women was seen.

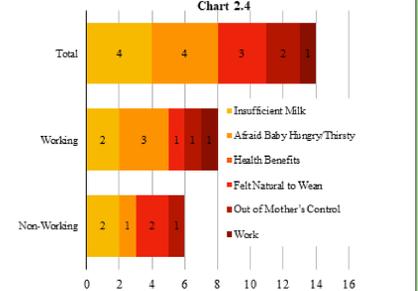
Other Factors and Breastfeeding

In Chart 2.21 each of the factors is illustrated with the proportion of women who were able to fulfill each category. For Exclusively Breastfeeding for 6 Months, 100% of those who experienced Normal Birth Stress were able to EBF for 6 Months. The group that had the most difficulty adhering to the WHO guidelines was that of women experiencing health issues; only 43% of women were able to EBF for 6 months. Among women, common issues were diabetes, high blood pressure, conditions necessitating surgery, and back pain from multiple anesthetic injections prior to C-sections. Given that women with pre-existing health issues often need C-sections, this category often overlaps with the other. From this section of the chart, one can find that working women and women with Health Issues— especially if they get a C-section— are the most likely to have trouble breastfeeding exclusively for 6 Months. With regards to feeding breastmilk within the first hour, women with health issues were least likely to do so (29%). Those who had a stressful normal birth also had a small proportion. Breastfeeding for 2 years is important for proper cognitive development, however only 7% of working women were able to do this when compared to the 73% of non-working women; this was previously shown to be highly statistically significant.

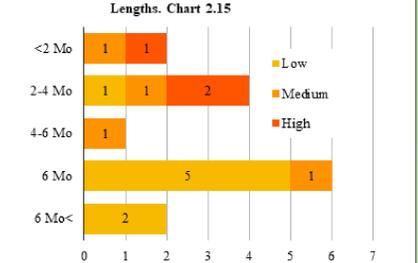
Proportion of Women in Selected Categories able to fulfill WHO Guidelines Chart 2.21



Reasons for Supplementary Feeding < 6 Mo Chart 2.4



Stress Categories Distribution Across Feeding Lengths. Chart 2.15



CONCLUSIONS

Many of the factor categories described had overlapping participants given the interwoven nature of the factors and the small survey size. That being said, a couple clear associations can be seen. The first is that women involved in productive work are statistically significantly less likely to breastfeed their children for more than two years when compared to their nonworking counterparts. This may be due to a variety of factors, but it could also be linked to the lack of adequate childcare policies at work that allow women to bring children. The fact that so few working women were unable to breastfeed for more than two years is indicative of a generational shift; in focus group discussions, older women who worked in the fields for 10+ hours a day breastfed their children for at least three years. This was easily done because such women had the ability to bring their children with them to work. The other group of women who had the most difficulty adhering to the WHO guidelines were women who had health issues or underwent a C-section. This reflects both generational differences and an issue within the healthcare system. In the older generations, there were zero C-sections and having joint pain at the age of thirty was unheard of. In general, there seemed to be a large increase in the number of chronic diseases that afflicted women and for which there was limited treatment.

Given these associations, policies that increase funding to hospitals, establish comprehensive maternal healthcare, and enable the creation of local Village Health Groups to connect women through all reproductive stages as a support network.

Considering the complex social and health-related context in which breastfeeding is practiced, a larger exploratory study should be completed throughout other parts of Tamil Nadu, with greater numbers and more individual interviews with elders. Studies on the effects of media and technology on breastfeeding perceptions should also be conducted as means of trying to assess the cause behind generational disconnects.

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